

BLACKLEG OF GERANIUM

R. M. Leahy and T. S. Schubert

Geraniums (Pelargonium hortorum Bailey and P. zonale Ait.) are widely distributed and commonly used as warm weather annuals and flowering, potted plants. Many different cultivars of geranium are available, most of which are propagated by stem cuttings. More recently, new seed strains have become popular (1). Geraniums can be obtained in nearly every stage of growth. Unrooted, calloused, or rooted cuttings are most often procured by commercial growers to "finish" and market to consumers (1).

For those involved in the commercial production of cuttings or finished plants, good sanitation, proper cultural conditions and effective disease control are of paramount importance. One disease, commonly known as blackleg, can be particularly devastating during every stage of the propagation process when unsanitary conditions prevail. Forty to 100 percent infection of cuttings is possible when the blackleg disease becomes established in propagation areas or rooting beds (5,6). The disease is apparently found wherever geraniums are grown (2).

CAUSE. Several different species of Pythium have been found to cause blackleg of geranium,; however, Pythium splendens Braun has been consistently isolated from geraniums exhibiting blackleg symptoms in Florida. Pythium splendens was originally described in 1925 on geranium cuttings (4).



Fig. 1. Rooted geranium cutting exhibiting blackened stem and petioles caused by Pythium splendens. (DPI Photo #703033)

SYMPTOMS. The first symptom of disease is brown water-soaked stem tissue located at the base of cuttings. Water-soaked discoloration spreads quickly, turns black and climbs three to four inches up the stem eventually causing petiole rot, wilt, and total collapse of the plant. A slimy, shiny appearance of the rotted black tissue (Fig 1) is also a common and diagnostic symptom (6). Pythium infection of seedling geraniums has not yet proved to be a frequent problem, but damping off symptoms could be expected (3).

Blackleg can be confused with Botrytis blight (6) or bacterial rot (3). Botrytis causes brown, water-soaked, basal cankers similar to blackleg. In contrast to blackleg, however, the stem lesions caused by Botrytis typically remain dull, dark brown, and the infected cuttings may linger for several weeks while Pythium-infected cuttings tend to decline rapidly. Xanthomonas campestris pv. pelargonii infected cuttings display blackened vascular bundles and wilted leaves as they slowly rot from the base upward. In two to four weeks, stems of cuttings with bacterial rot become a dull brown-black (3).

CONTROL. Control of blackleg disease depends primarily on strict sanitation and optimum growing conditions (5). Use of pathogen-free potting soil, rooting media, and cuttings taken from clean stock plants will reduce or prevent the incidence of the disease. Additionally, the practice of air drying the fresh cuttings (1) and using bottom heat to speed callous and root formation (6) will also help prevent the disease.

In addition to using sanitary techniques, fungicidal soil drenches applied either before or after cuttings are stuck, will help prevent the occurrence of blackleg disease. Terrazole 25% EC, Truban 30% WP, 40.7 F, 5G, or 25% EC, Banrot 5:25% WP, Lesan 35 WP, and Subdue 2E (25.1%) are all EPA registered for use on geranium (7).

SURVEY AND DETECTION. In its early stages, blackleg appears as a rapidly progressing brown water-soaked rot at the base of cuttings. With time, rotted tissues turn a characteristic shiny, black color.

LITERATURE CITED.

1. CLINE, M. N., and D. NEELY. 1984. Wound-healing process in geranium cuttings in relationship to basal stem rot caused by Pythium ultimum. Plant Dis. 67:636-638.
2. Commonwealth Mycological Institute. 1979. Distribution Maps of Plant Disease, Map 433, ed. 2. Pythium splendens Braun.
3. FORSBERG, J. L. 1975. Diseases of ornamental plants. Special Pub. No. 3, revised. Univ. Illinois-Urbana-Champaign, p. 80.
4. MATTHEWS, V. D. 1931. Studies on the genus Pythium. Chapel Hill, Univ. North Carolina Press, pp. 89-90.
5. MILLER, H. M., and R. J. SAUVE. 1975. Etiology and control of Pythium stem rot of geranium. Plant Dis. Repr. 59:122-126.
6. NICHOLS, L. P., and P. E. NELSON. 1971. Root rots, Pythium blackleg. In Geraniums: A Penn State Manual. University Park, PA, Pennsylvania Flower Growers. pp. 218-220.
7. SIMONE, G. W. 1983. Fungicides for use on ornamentals, 1983-1984. Florida Coop. Ext. Serv. Circ. No. 484A, Inst. Food and Agric. Sci., Univ. Fla., Gainesville. p. 2, 24.